Project #2 Edmunds Central School District

FINAL PERFORMANCE REPORT

AWARD YEARS 2016 FORWARD

A Final Performance Report must be received within 90 days after the end of the grant agreement. You are required to report on the administration of the agreement and each project approved within the agreement. The completed Final Performance Report will be posted to the AMS website.

GRANT INFORMATION

AGREEMENT

AMS Agreement Number:	2018SDECSD01			
Period of Performance:	**Start Date:**	9/30/2018	**End Date:**	9/29/2021
Award Amount:	$27,835.39			

RECIPIENT

Recipient Organization Name:	Edmunds Central School District
Recipient's Point of Contact	
Name:	Spencer Cody
Phone:	605-287-4251
Email:	Spencer.Cody@k12.sd.us

REPORT

Report Type:	Final Report
Date Report is Submitted:	1/1/2022

GRANT ADMINISTRATION

If funds were used for grant administration, indicate the amount of funding expended from the beginning of the grant to the end of the reporting period covered by this report. Also, indicate the amount charged as indirect expenses versus the amount charged as direct expenses.

Amount Requested	Direct and/or Indirect Expended to Date
$27,835.39	$27,835.39

FINAL PROJECT REPORT TEMPLATE

Final Performance Reports must illustrate the completion of each project within the grant agreement. Each project shall be outlined as separate project profiles. You will report on projects in the same order they were submitted in the approved application and subsequent amendments.

PROJECT INFORMATION

Project Title	Specialty Crops in the Classroom: Educating South Dakota's Youth through Mobile Classroom Growing Systems

Recipient Organization Name:	Edmunds Central School District			
Period of Performance:	**Start Date:**	9/30/2018	**End Date:**	9/29/2021

Recipient's Project Contact	
Name:	Spencer Cody
Phone:	605-287-4251
Email:	Spencer.Cody@k12.sd.us

PERFORMANCE NARRATIVE

PROJECT BACKGROUND

Provide enough information for the reader to understand the importance or context of the project. This section may draw from the background and justification contained in the approved project proposal.

The Edmunds Central School District presented a proposal that built upon its current project that aimed to dramatically impact the exposure to and consumption of specialty crops by developing mobile classroom growing systems geared toward educating and providing opportunities to consume specialty crops not consumed by PreK-6 students in South Dakota due to limitations associated with the per student allocation for general education and the Fresh Fruit and Vegetable Program and obtaining such crops beyond their growing season in three phases: phase one involved research and development implemented by the Edmunds Central science department perfecting protocols and curriculum associated with growing specialty crops in classrooms for education and consumption purposes during the 2017-18 school year, phase two had successfully recruited 50 teachers to implement the same mobile growing systems in their classrooms, and phase three coordinated their usage during the 2018-19 and 2019-20 school years. Throughout all three phases, extensive efforts had been made to recruit and retain educators into the project and promulgate the concept of growing specialty crops in classrooms for educational and nutritional purposes through presentations, workshops, and published work. This application sought to build upon these successes by expanding curriculum support to middle school and high school grades through the development of in-depth specialty crop curriculum support for higher level learning and expanding material and supplies support to an additional 17 teachers for the specialty crops cohort.

ACTIVITIES PERFORMED

Address the below sections as they relate to the entire project's period of performance.

OBJECTIVES

Provide the approved project's objectives.

#	Objective	Completed?	
		Yes	No*
1	Develop protocols for growing specialty crops in a classroom setting and associated curriculum to make implementing the consumption and education of specialty crops in a classroom environment practical for most educators through the usage of a mobile light growing system.	X	
2	Train teachers to utilize a mobile light growing system using the protocols and curriculum refined and assembled during the research phase.	X	
3	Implement mobile plant growing systems in an additional 17 classrooms across South Dakota and coordinate their usage during the 2018-19 and 2019-20 school years.	X	
4	Increase the consumption of specialty crops above and beyond districts' Fresh Fruit and Vegetable Programs and lunch programs by providing specialty crops that are not currently or commonly provided.	X	

5	Educate students about specialty crops through practically implemented curriculum aligning to state science standards and educational guidelines mandated by the Fresh Fruit and Vegetable Program.	X	
6	Promote the concept and benefits of incorporating specialty crops in science and nutrition education through presentations, exhibits, workshops, and published work.	X	

**If no is selected for any of the listed objectives, you must expand upon this in the challenges and lessons learned sections.*

ACCOMPLISHMENTS

List your accomplishments for the project's period of performance, including the impact they had on the project's beneficiaries, and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
1	Successfully presented on the program's results at the South Dakota STEM Conference in Huron in February, 2020.	**Objective 6:** The presentation session allowed for the opportunity to communicate program developments to participating classrooms and teachers outside of the program that were interested in incorporating specialty crops into their curriculum.
2	In addition to distributing 50 light cart growing systems and specialty crops growing supplies to the FY17 school districts throughout the state in time for the 2018-19 school year; this grant allowed us to add these 19 teachers to same cohort at the beginning of the 2019 school year with light cart equipment and supplies for a total of 70 teachers and 55 school districts: 1. Leola School District: Frank Buck: Frank.Buck@k12.sd.us New contact for Leola: Trevor Van Tilburg: Trevor.Vantilburg@k12.sd.us 2. Mitchell School District: Jeff Hoffman (Jeff passed away): Jeff.Hoffman@k12.sd.us New ag teacher is Karen.Roudabush@k12.sd.us 3. Mitchell School District: Julie Olson: Julie.Olson@k12.sd.us 4. Mitchell School District: Kelli Mueller: Kelli.Mueller@k12.sd.us 5. Mitchell School District: Stephanie Tyler: Stephanie.Tyler@k12.sd.us 6. Menno School District: Rose Hertz: Rose.Hertz@k12.sd.us 7. Menno School District: Katie Huber: Katie.Huber@k12.sd.us 8. Elk Mountain: Pam Bartlett: Pam.Bartlett@k12.sd.us Sioux Falls School District: Tina Foell: Tina.Foell@k12.sd.us Did not want a light cart and was removed from the cohort is sharing with Rise Jongeling.	**Objectives 1, 2, 3, 4, and 5:** All light carts and growing materials were delivered to all 50 school districts before the start of the 2018-19 school year. This was necessary in order to implement specialty crops curriculum and collect data on these activities during the fall semester of the 2018-19 school year. Throughout 2019 these schools collected data on their classroom work with specialty crops involving the light carts. Some additional replacement parts had to be ordered to keep some programs going within the cohort. Additionally, curriculum and logistical support has been provided to these schools as needed. The additional 19 teachers had their supplies and light carts distributed out during December of 2018 to February of 2019 in order to collect a semester of data for the spring semester of 2019. Data was collected until May of 2019. The cohort again submitted data during the 2019-20 school year until March of 2020 when COVID-19 shut down South Dakota schools. The projects were restarted in August of 2020 and are continuing through the school year until May of 2021.

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
	9. Sioux Falls School District: Rise Jongeling: Rise.Jongeling@k12.sd.us 10. Sioux Falls School District: Kristin Miller: Kristin.e.miller@k12.sd.us Sioux Falls School District: Ryan Rank: Ryan.Rank@k12.sd.us Declined the light cart due to being in a new building. 11. Garretson School District: Julie Mueller: Julie.Mueller@k12.sd.us 12. Watertown School District: Tricia Gerlach: Tricia.Gerlach@k12.sd.us 13. Rapid City School District: Stacy Campbell: Stacy.Campbell@k12.sd.us 14. Doland School District: Bailey Coats: Bailey.Coats@k12.sd.us 15. Montrose School District: Rachel Heisinger: Rachel.Heisinger@k12.sd.us 16. West Central School District: Jeff Peterson: Jeff.Peterson@k12.sd.us 17. Brandon Valley School District: Jackie Bogue: Jackie.Bogue@k12.sd.us 18. Parkston School District: Jacob Englin: Jacob.Englin@k12.sd.us New contact: Morgan Ackerman at Morgan.Ackerman@k12.sd.us 19. Clark School District: Greg Janisch: Greg.Janisch@k12.sd.us Paul Streff at Paul.Streff@k12.sd.us	
3	Successfully implemented specialty crops curriculum into the Edmunds Central School District in multiple science class settings in grades 7-12 and elementary and colony school settings in grades K-6.	**Objectives 1, 2, 3, 4, and 5:** This was essential in working all of the logistical bugs out of the light carts and growing a wide array of specialty crops, 70+ varieties, to aid in curriculum development and assistance to school districts once they had begun their projects in the fall of 2018. In 2019 we largely worked on specialty crops issues that other schools were experiencing. We had a number of schools report difficultly in germination; so, we developed several methods utilizing heat lamps and/or incubators to increase the germination rates in our cohort schools to a great degree of success. We continued to work on curriculum and trouble-shooting new varieties of specialty crops throughout the 2019-20 school year. The COVID-19 outbreak did end our work with specialty crops two months early in 2020 forcing us to stop grow cart usage at the end of March, rather than in May. Grow cart usage and curriculum development began again during August of 2020 and continued through the 2020-21 school year in order to develop curriculum locally and to assist cohort schools in developing

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
		specialty crops curriculum and dealing with issues as they arise.
4	Successfully utilized NSTA and state STEM conferences to recruit teachers into the program. Additionally, a presentation on the project was given at the state STEM conference in Huron in February of 2020 and at the Regional NSTA Conference in December of 2021.	**Objective 6:** This was essential in recruiting teachers into our cohort of 70 teachers and 55 school districts. I was able to make many contacts that were either directly recruited into the cohort or provided additional contacts that were ultimately recruited into the cohort. Also, curriculum from both conferences were incorporated into the specialty crops curriculum during its development along with a various ideas and strategies from various science vendors in growing plants indoors aiding in trouble-shooting technical issues with our growing systems. This continued to be beneficial throughout 2019 and is well attended by cohort participants and other interested educators. The STEM conference workshops have evolved into a method of working in person with other educators to resolve issues and challenges that the cohort is experiencing. While the 2021 STEM Ed Conference has been canceled, we had hoped to present at the NSTA National Conference in Chicago in April of 2021. That too was canceled; so, we rescheduled to the Regional NSTA Conference in Los Angeles in December of 2021. During the LA conference, six students involved with the project exhibited our project results throughout the conference using two pop-up banners while the project PI gave a formal presentation on the project during a separate session with K-12 teachers.
5	Successfully brought specialty crops media through our articles in the Aberdeen American News and the Farm Forum/Green Sheet and the Roscoe Independent Newspapers.	**Objective 6:** In order to increase awareness to our project and encourage additional recruitment into the cohort, we had a reporter from the Aberdeen American News visit our classroom to do a news story on the project. It made the front page on the Aberdeen American News and the Farm Forum: Green Sheet. In 2019 we did another article through the Farm Forum/Green Sheet along with enrolling our specialty crops projects into the Samsung Solve for Tomorrow challenge getting into the top 300 nationally. Several media stories were done on this, as well. Two stories in our local newspaper, the *Roscoe Independent*, were done on our exhibit at the NSTA in December of 2021.
6	Successfully trained teachers to utilize a mobile light growing system using the protocols and curriculum refined and assembled during the research phase.	**Objectives 1, 2, 3, 4, and 5:** The additional 19 teachers were trained onsite in Roscoe upon pick up during the months December, 2018, and January, 2019, for those schools who were able to make those times work out. Teachers were able to work with ten light carts set up in the science

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
		room featuring a wide range of specialty crops including plants from seeds and cuttings. Additionally, teachers were trained on the materials and procedures needed to support the light cart's functionality. For those schools in the cohort who were not able meet onsite in Roscoe, a training was offered at the Science and Math conference in February during and after a presentation on the subject during the Saturday of the conference and with a displayed light cart system at the conference throughout the day on Friday and Saturday in the commons area with other booths. Several teachers within the cohort were trained at the conference while several dozen teachers beyond the cohort were exposed to the project through the display and presentation during the conference. In 2019 and 2020, we have continued to offer in person support at these workshops. These presentations have taken on a vital role in providing discussion and direct feedback to cohort participants in addition to reporting our successes and challenges to the broader learning community. COVID-19 has canceled the 2021 STEM Ed Conference in Huron, and we had hoped to still present at the NSTA National Conference in Chicago in April of 2021. That also was canceled. Consequently, we rescheduled to December of 2021 to exhibit and present at the Regional NSTA Conference in Los Angeles.
7	Successfully increased the consumption of specialty crops above and beyond districts' Fresh Fruit and Vegetable Programs and lunch programs by providing specialty crops that are not currently or commonly provided.	**Objectives 1, 2, 3, 4, and 5:** During the trial phase in Roscoe, students grew more than 70 varieties of specialty crops. Of these they consumed more than 30 varieties of specialty crops. Additionally, another 20 specialty crops were taken home to grow in gardens and planters over the summer. Several students were able to successfully continue growth throughout the summer; however, production was not directly documented. During the first year of school implementation through November of 2018, approximately 400 students had been exposed to the 19 varieties of specialty crops distributed to the cohort schools. Consumption in these cohort schools were documented throughout 2019. As of December of 2019, 2,085 students have been exposed to 69 varieties of specialty crops distributed to the cohort schools. By September of 2020, 2,690 students have been exposed to 141 specialty crops. Survey data suggested that the project had an impact on student and parent/guardian consumption of specialty crops.

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
8	Successfully educated students about specialty crops through practically implemented curriculum aligning to state science standards and educational guidelines mandated by the Fresh Fruit and Vegetable Program.	**Objectives 1, 2, 3, 4 and 5:** In Edmunds Central through the trial phase and the November of the cohort trial, several lessons relating to plant science, photosynthesis, nutrition, and soil science were implemented in multiple science classes. By November of 2018 of the cohort school year, approximately 400 students have been engaged in curriculum aligned with state science standards and educational guidelines associated with the Fresh Fruit and Vegetable Program. This effort has been guided through email and discussion with the lead school and among schools within the cohort. Curriculum piloted in Edmunds Central or curriculum ideas piloted in cohort schools have been continually bounced around the cohort in different manifestations and spinoffs of the original idea. This has yielded many projects and lab activities among the cohort dealing with specialty crops and nutrition, pollution, soil type, fertilizer, carbon dioxide absorption, light requirements, production, careers, and health benefits. Throughout 2019 this work had continued. As of December of 2019, 2,085 students have been engaged in curriculum aligned with state science standards and educational guidelines associated with the Fresh Fruit and Vegetable Program through our specialty crops cohort, which has been documented through the completion of pre-surveys by each participating student. By December of 2019, 2,085 students had been engaged in curriculum aligned with state science standards and educational guidelines associated with the Fresh Fruit and Vegetable Program through our specialty crops cohort, which had been documented through the completion of pre-surveys by each participating student. As of September 2020, 2,690 students have been engaged in curriculum aligned with state science standards and educational guidelines associated with the Fresh Fruit and Vegetable Program through our specialty crops cohort.
9	Successfully promoted the concept and benefits of incorporating specialty crops in science and nutrition education through presentations, exhibits, workshops, and published work.	**Objective 6:** In February of 2020 we presented on specialty crops at the Science and Math Conference in Huron. This also included a light cart informational display that we had up the entire conference that Friday and Saturday. This included presenting to and working with dozens of educators on the subject. In addition, we presented at the NSTA in St. Louis in April of 2019 on the specialty crops project. This built on the contacts and teacher recruitment carried out at

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
		the 2018 NSTA. In December of 2021, we took a group of six students who were active in the project and exhibited on the project throughout the conference in addition to a formal presentation.

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project's original intent that you experienced during this project. Also, provide the corrective actions you took to address these issues. If you did not attain an approved objectives, outcome(s), and/or indicator(s), provide an explanation in the Corrective Actions column.

#	Challenge or Development	Corrective Action or Project Change
1	Teacher retention and replacement has been a big challenge. One participating teacher has had the misfortune of passing away while several other teachers have moved on to other schools or careers.	In each case that we have lost a teacher due to a career change or death, we have made attempts to reestablish the program with the replacement teacher. In many cases this has proven to be successful; however, there are some schools that are currently no actively reporting survey data because the replacement teacher is not providing data. We continued to try to work with these schools to bring them back into compliance with data reporting wherever possible throughout the grant, but unfortunately, there were still some schools that did not contribute survey data.
2	COVID-19 outbreak	The COVID-19 outbreak caused all schools in South Dakota to close in March of 2020 through the end of the school year. It greatly impacted data collection for our post-survey. We were on track to collect another 800+ post-surveys based on our pre-survey count but only collected 111 post-surveys due to the sudden nature of the shutdown and the chaotic educational conditions that existed in its aftermath. This, however, did not prevent us from meeting our student and parent/guardian outreach goals.
3	COVID-19 outbreak	Student and staff travel has been significantly hampered. So far, we have not been permitted to have on-site visits of specialty crops producers since these sites are currently closed to the public. But, we have used other resources to continue to develop curriculum. However, you could say we took the lemons dealt us and made lemonade out of it. Since we had so many canceled conferences and site visits, we did have enough travel funds left to take a group of students to the NSTA in Los Angeles in December of 2021 to exhibit the project. This was not originally planned but was a result of the pandemic.
4		

LESSONS LEARNED

Provide recommendations or advice that others may use to improve their performance in implementing similar projects.

Collecting data from cohort schools is difficult. We found that having an incentive in place to encourage pre-survey and post-survey administration was helpful. Schools that administered surveys received specialty crop seed sets and other supplies. Also, expect adversity and do your best to promote the project through it. Many of our conference and on-site visits were canceled due the pandemic; however, we were able to use those same funds to regroup and present a remarkable exhibit on the project at a conference with students who were active in the project.

CONTINUATION AND DISSEMINATION OF RESULTS (IF APPLICABLE)

Describe your plans for continuing the project (sustainability; capacity building) and/or disseminating the project results.

We had printed off two pop-up posters of the project. They will be on display at the next STEM Ed Conference in Huron in February, 2022, and will be used in other conference and school display venues. The lead school will continue to offer support to cohort schools to encourage the continued usage of specialty crops in their curriculum.

BENEFICIARIES

Number of project beneficiaries: 6,833 (2,690 students and 4,143 parents/guardians)

OUTCOME(S) AND INDICTATOR(S)/SUB-INDICATOR(S)

Provide the results of the project outcome(s) and indicator(s) as approved in your application and project proposal. The results of the outcome(s) and indicator(s) will be used to evaluate the performance of the Program on a national level.

OUTCOME MEASURE(S)

Select the Outcome Measure(s) that were approved for your project.

- ☐ **Outcome 1**: Enhance the competitiveness of specialty crops through increased sales
- ☑ **Outcome 2**: Enhance the competitiveness of specialty crops through increased consumption
- ☑ **Outcome 3**: Enhance the competitiveness of specialty crops through increased access
- ☐ **Outcome 4**: Enhance the competitiveness of specialty crops though greater capacity of sustainable practices of specialty crop production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources
- ☐ **Outcome 5**: Enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems
- ☐ **Outcome 6**: Enhance the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety
- ☐ **Outcome 7**: Enhance the competitiveness of specialty crops through increased understanding of the ecology of threats to food safety from microbial and chemical sources
- ☐ **Outcome 8**: Enhance the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development

OUTCOME INDICATOR(S)

Provide the indicator approved for your project and the related quantifiable result. If you have multiple outcomes and/or indicators, repeat this for each outcome/indicator (add more rows as needed).

#	Outcome and Indicator	Quantifiable Results
1	Outcome 2, Indicator 1.a. Of the 2,050 total number of children and youth reached, 1,842 will gain knowledge about eating specialty crops.	By November of 2018 we had roughly 400 documented students participating in the project based on pre-survey submissions. By December of 2019, we had 2,085 documented students participating in the project through completed pre-surveys. We had collected post-survey data from 1,567 students; so, we had met our data

	Outcome 2, Indicator 1.b. Of the 2,050 total number of children and youth reached, 1,842 will report an intention to eat more specialty crops. Outcome 2, Indicator 1.c. Of the 2,050 total number of children and youth reached, 1,842 will report eating more specialty crops.	collection goal and continued to collect data. By September of 2020, we had 2,690 documented students participating in the program through completed pre-surveys and 1,678 students through completed post-surveys. We set a very high 90% threshold as a target goal for all of our indicators. In many cases we were able to meet or exceed that goal, but in a few indicators, we fell short likely because the starting percentages in the cohort were so low requiring a remarkably large shift in order to meet our goals. Outcome 2, Indicator 1.a. went from a 12.95% indicating student knowledge of specialty crops to 90.77% indicating student knowledge of specialty crops. This exceeded our goal for Outcome 2, Indicator 1.a. Outcome 2, Indicator 1.b. went from 24.62% student consumption of specialty crops to 99.56% student consumption of specialty crops. This exceeded our goal for Outcome 2, Indicator 1.b. Outcome 2, Indicator 1.c. went from 12.31% students consuming more specialty crops to 84.62% students consuming more specialty crops. This fell just below our 90% goal for this outcome. There may have been some confusion in some of the responses that contributed to this since some students seemed to be under the impression that this was a seasonal reference, rather than general personal consumption.
2	Outcome 2, Indicator 2.a. Of the 1,475 total number of adults reached, 1,180 will gain knowledge about eating specialty crops. Outcome 2, Indicator 2.b. Of the 1,475 total number of adults reached, 1,180 will report an intention to eat more specialty crops. Outcome 2, Indicator 2.c. Of the 1,475 total number of adults reached, 1,180 will report eating more specialty crops. Outcome 2, Indicator 4. The number of new specialty crops and/or specialty crop products introduced to consumers: 15	We are collecting information on their parents' preferences through the student surveys to maximize data collection. Currently, we are reaching an estimated 1.54 parents/guardian (accepted national average) for each participating student. Consequently, we had more than 600 adults being reached through the pre-surveys submitted thus far with only 30% of the cohort reporting back in November of 2018. Additionally, we continued collecting information on all four of these indicators and will be able to report on them at the end of this school year. Since we can already cross-reference pre-survey responses with what those classes are growing in the classroom, we do know that we have already met Outcome 2, Indicator 4. We grew approximately 70-80 specialty crop varieties in Edmunds Central during the research and development phase. In most cases students were able to consume the crops as well. Since that time we have added another 19 specialty crops distributed out to the cohort: blue lake bush beans, little marvel peas, sugar snap peas, cherry belle radishes, sparkler white tip radishes, sweet basil, coriander cilantro, Italian parsley, mammoth dill, thyme, bloomsdale spinach, buttercrunch

		lettuce, bright lights swiss chard, nantes carrots, blue lake pole beans, Detroit dark red beets, danvers carrots, and a select salad blend of lettuce. In 2019 we sent out another 50 specialty crops to cohort schools to further encourage the growth and development of their specialty crop curriculum and participation. By December 2019 we were estimating that we had impacted more than 3,200 adults that are parents to the 2,085 students that were actively participating in the program. By September of 2020, a total of 2,690 students had participated in the program with an estimated 4,143 adults that are parents to these students. We did not have any issues in meeting these goals since we had set our goals to a lower 80% threshold for parents and guardians. Data was collected through student response surveys concerning their parent's information. Outcome 2, Indicator 2.a. went from 9.23% of students who thought their parents knew about specialty crops to 95.38% of students who thought their parents knew about specialty crops. This greatly exceeded our 80% goal. Outcome 2, Indicator 2.b. went from 10.77% of students who thought their parents intended to eat more specialty crops to 89.23% of students who thought their parents intended to eat more specialty crops. This exceeded our goal of 80%. Outcome 2, Indicator 2.c. went from 18.46% of students indicating that their parents consume specialty crops to 98.46% of students indicating that their parents consume specialty crops. This greatly exceeded our goal of 80%. Outcome 2, Indicator 4 had a goal of 15 new specialty crops exposed to students. We greatly exceeded this goal. We had documented the growing of 141 specialty crops during the program including the following: red garnet amaranth, arugula, Mary Washington asparagus, Italian large leaf basil, blue lake bush bean, broad Windsor fava bean, golden wax bean, king of the garden lima bean, Chioggia beet, cylindra beet, Detroit dark red beet, early wonder beet, ruby queen beet, borage, green sprouting broccoli, Long Island improved Brussel sprouts, Copenhagen market cabbage, golden acre cabbage, bok choi cabbage, caraway, Danvers carrot, red cored Chantenay carrot, shin kuroda carrot, snowball cauliflower, tall Utah celery, curled chervil, Georgia southern collards, Vates collards, coriander, curled cress, Marketmore cucumber, Boston pickling cucumber, Poinsett cucumber straight eight cucumber, cumin, mammoth dill, black beauty eggplant, long purple eggplant, Florence fennel, dwarf Siberian kale, red Russian kale, Vates, dwarf blue kale, purple Vienna

		kohlrabi, white Vienna kohlrabi, black seeded Simpson lettuce, bronze mignonette lettuce, butter crunch lettuce, ice berg lettuce, oak leaf lettuce, prizehead lettuce, red romaine lettuce, banana melon, Hale's best jumbo melon, hearts of gold melon, honey dew melon, honey rock melon, rocky ford melon, Florida broadleaf mustard, old fashioned mustard, south, giant curled mustard, Clemson spineless okra, emerald okra, Perkin's long pod okra, red burgundy okra, burgundy red onion, evergreen bunching onion, white sweet Spanish onion, yellow sweet Spanish onion, moss curled parsley, Harris model parsnip, hollow crown parsnip, green arrow pea, little marvel pea, sugar snap pea, banana sweet pepper, California wonder pepper, cayenne long red pepper, Cubanelle pepper, jalapeno early pepper, Hungarian hot wax pepper, serrano pepper, mammoth gold pumpkin, small sugar pumpkin, champion radish, cherry bell radish, China rose radish, comet radish, French breakfast radish, white icicle radish, American purple top rutabaga, mammoth sandwich salsify, summer savory, Bloomsdale spinach, noble giant spinach, blue Hubbard squash, Cocozelle squash, early straight neck squash, early white bush squash, table king bush squash, table queen squash, spaghetti squash, Waltham butternut squash, dark green zucchini squash, golden zucchini squash, ford hook Swiss chard, large with ribbed Swiss chard, ruby red Swiss chard, winter thyme, ace 55 tomato, Azoychka tomato, beefsteak red tomato, big rainbow tomato, black krim tomato, bandywine red tomato, Cherokee purple tomato, chocolate stripes tomato, Floradade tomato, golden jubilee tomato, homestead 24 tomato, Manalucie tomato, Marglobe improved tomato, Marion tomato, purple Calbash tomato, red cherry large tomato, Roma tomato, Rutgers tomato, striped stuffer tomato, Tigerella tomato, yellow pear tomato, purple top turnip, seven top turnip, Shogoin turnip, white egg turnip, black diamond watermelon, Charleston grey watermelon, Congo watermelon, crimson sweet watermelon, sugar baby watermelon, tender sweet orange watermelon, and white yarrow. In addition, our survey data suggested that students were learning about new specialty crops and retaining this information. Concerning Outcome 2, Indicator 4, we asked students if they could name specialty crops. The pre-survey results ranged from 0-3 specialty crops listed in responses with a very low average of 0.17 specialty crops per response. Many responses included non-specialty crops such as corn or wheat that were disqualified from

		the count. The post-survey demonstrated a very large increase in the knowledge of the variety of specialty crops with a range of 0-20 specialty crops listed in responses with an average of 9.55 specialty crops listed per response.
3	Outcome 3, Indicator 1.a. Of the 3,525 total number of consumers or wholesale buyers reached, 2,997 will gain knowledge on how to access/produce/prepare/preserve specialty crops. Outcome 3, Indicator 1.b. Of the 3,525 total number of consumers or wholesale buyers reached, 2,997 will report an intention to access/produce/prepare/preserve specialty crops. Outcome 3, Indicator 1.c. Of the 3,525 total number of consumers or wholesale buyers reached, 2,997 will report supplementing their diets with specialty crops that they produced/prepared/obtained.	As of November of 2018, we had approximately 1,000 consumers (400 student and 600 adults) participating in our pre-survey data. We continued to gather information on all three of these indicators and collected post-survey results at the end of the school year. As of December of 2019, we had approximately 5,300 consumers (3,200 adults and 2,100 students) participating in our pre-survey data. By September of 2020, we had a total of 2,690 students and an estimated 4,143 parents/guardians yielding an estimated total of 6,833 consumers documented in the program greatly exceeding our goal. Outcome 3, Indicator 1.a. had a pre-survey response of 13.85% indicating that they produce, prepare, and/or preserve specialty crops compared to 66.15% that indicated in the post-survey responses that they produced, prepared, and/or preserved specialty crops. This fell short of our 85% goal, but we were able to exceed our goal in raw numbers due to the volume of participants in the program. Outcome 3, Indicator 1.b. had a pre-survey response of 12.31% indicating that they intend to produce, prepare, and/or preserve specialty crops in the near future compared to 81.54% that indicated in the post-survey responses that they intended to produce, prepare, and/or preserve specialty crops in the near future. This also fell short of our 85% goal but was well over our goal in raw numbers due to the volume of participants in the program. Outcome 3, Indicator 1.c. had a pre-survey response of 15.38% indicating that they currently consume specialty crops that either the student and/or parents/guardians had prepared compared to 78.46% that indicated in the post-survey responses that they currently consume specialty crops that either the student and/or parents/guardians had prepared. This also fell short of our 85% goal but was well over our goal in raw numbers due to the volume of participants in the program. For Outcome 3, a contributing factor to the lower than expected shift may be the sampling method. We were asking students about both their personal eating habits and their parents. Some students did not know the eating habits of their parents/guardians and counted against the shift in sentiment. It was necessary to ask students for this data in order to collect the data efficiently. Surveys were sent home for

		Outcome 3 questioning in the development phase in Edmunds Central yielding a very low response rate.
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DATA COLLECTION

Explain what data was collected, how it was collected, the evaluation methods used, and how the data was analyzed to derive the quantifiable indicator.

Pre-survey and post-survey data was collected via paper and pencil method or a Google forms version of the same surveys administered by the classroom teacher. Survey data was emailed to the principal investigator for analysis and reporting.

FEDERAL PROJECT EXPENDITURES

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (Federal Funds ONLY)
Personnel	$0.00	$0.00
Fringe Benefits	$0.00	$0.00
Travel	$8,305.41	$8,305.41
Equipment	$0.00	$0.00
Supplies	$15,775.98	$15,775.98
Contractual	$995.00	$995.00
Other	$0.00	$0.00
Direct Costs Sub-Total	$25,076.39	$25,076.39
Indirect Costs	$2,759.00	$2,759.00
Total Federal Costs	$27,835.39	$27,835.39

PROGRAM INCOME (IF APPLICABLE)

Source/Nature (i.e., registration fees)	Amount Approved in Budget	Actual Amount Earned
1. $0.00		
2.		
3.		
Total Program Income Earned		

Use of Program Income *Describe how the earned program income was used to further the objectives of this project.*
Not applicable.

ADDITIONAL INFORMATION

Provide additional information available (i.e., publications, websites, photographs) that is not applicable to any of the prior sections.

If you need photographs for Specialty Crops promotion, we have many hundreds of them to send. Some are currently posted on our school website: USDA | Edmunds Central School District (k12.sd.us) Several local papers wrote stories on our Specialty Crops project.
The Aberdeen American did a front page story on the project in February of 2018: https://www.aberdeennews.com/life/food/edmunds-central-growing-a-class-about-specialty-crops/article_5bd53e90-c72c-5957-b346-c4ea68d47c36.html

The same article was reprinted in the Farm Forum in February of 2018: https://www.farmforum.net/ag_news/roscoe-school-growing-a-class-on-specialty-crops/article_f4aab046-fcbd-5a6a-a860-14e22283eda7.html

The Aberdeen American did another story on the project in May of 2019. This article also showed up in the Farm Forum: https://www.farmforum.net/ag_life/roots-run-deep-when-planting-new-ideas/article_23751444-759a-11e9-8b48-b30488db8118.html

In December of 2019, our Specialty Crops project made the state finalist round in the Samsung Solve for Tomorrow competition: https://www.aberdeennews.com/news/education/edmunds-central-is-state-finalist-in-samsung-contest/article_b5cf537c-0c94-11ea-927b-7be142948f5b.html

Abstracts for some of the conferences that we presented our Specialty Crops project at:

2018 STEM Ed Conference in Huron, South Dakota: www.sdctm.org/documents/2018conference/2018program.pdf

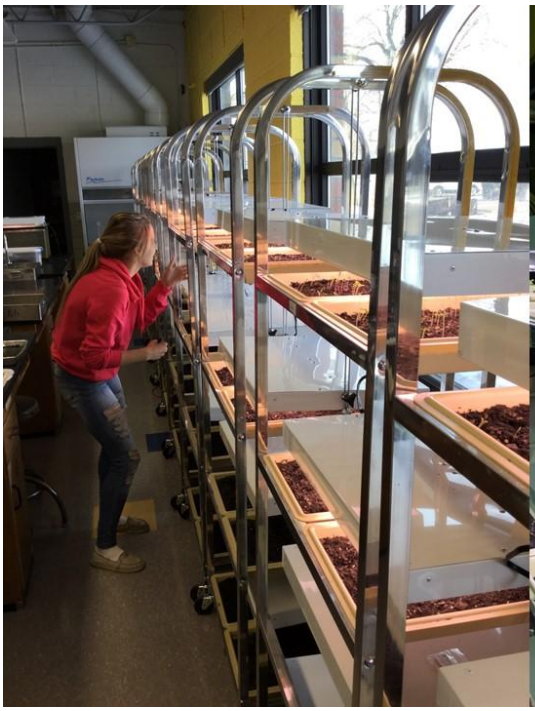
2019 STEM Ed Conference in Huron, South Dakota: www.sdctm.org/documents/2019conference/2019.SDSTEMEd.program.final.pdf

2019 National Science Teachers Association National Conference in St. Louis: https://s6.goeshow.com/nsta/national/2019/conference_program_sessions.cfm

2020 STEM Ed Conference in Huron, South Dakota: https://sdsta.k12.sd.us/Conf2020/28thAnnualConferenceProgram2020.final.12.17.pdf

2021 National Science Teachers Association Regional Conference in Los Angeles (exhibit): NSTA - National Science Teaching Association

2021 National Science Teachers Association Regional Conference in Los Angeles (formal presentation): Los Angeles 21 Area Conference on Science Education Onsite | NSTA



Innovation/Integration/Service: As the lead school in the Specialty Crops Cohort, we are always growing specialty crops in the classroom with my Biology and Life Science students. Students learn how to grow their own vegetables and later transplant them in the spring to grow their own garden over the summer. It has improved diets and decreased carbon footprints.

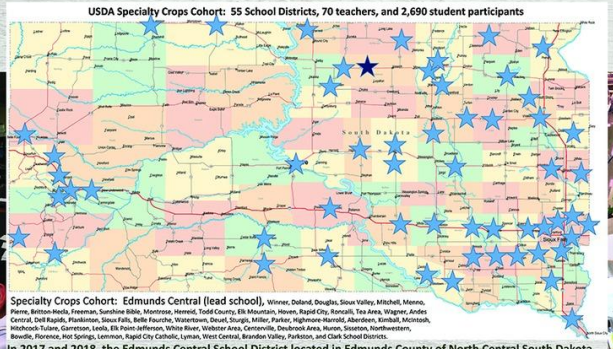
Innovation/Integration/Service: One project I have my Biology students work on was to demonstrate methods of reducing and reusing food waste. Students gather up spoiled or past-date produce or even leftover scraps and regenerate clones to be grown in the lab. This was incredibly popular with students and the community since few understood the potential of regenerating vegetables.

Innovation/Integration: My Biology students researched into issues that were experienced with carbon cycling during the Biosphere II Experiment using probeware I was able to secure from a Monsanto grant that I wrote and administered. They then replicated a miniature model of Biosphere II and tracked carbon dioxide levels. We will be visiting Biosphere II in March of 2020 as we continue to investigate the environmental challenges exposed by that experiment as a part of a NOAA Planet Stewards grant that I had written, won, and am now implementing.

Specialty Crops in the Classroom

Educating South Dakota's Youth through Mobile Classroom Growing Systems

USDA



Specialty Crops Cohort: Edmunds Central (lead school), Winner, Doland, Douglas, Sioux Valley, Mitchell, Menno, Pierre, Britton-Hecla, Freeman, Sunshine Bible, Montrose, Herreid, Todd County, Elk Mountain, Hoven, Rapid City, Roncalli, Tea Area, Wagner, Andes Central, Dell Rapids, Flandreau, Sioux Falls, Belle Fourche, Watertown, Deuel, Sturgis, Miller, Parker, Highmore-Harrold, Aberdeen, Kimball, McIntosh, Hitchcock-Tulare, Garretson, Leola, Elk Point-Jefferson, White River, Webster Area, Centerville, Deubrook Area, Huron, Sisseton, Northwestern, Bowdle, Florence, Hot Springs, Lemmon, Rapid City Catholic, Lyman, West Central, Brandon Valley, Parkston, and Clark School Districts.

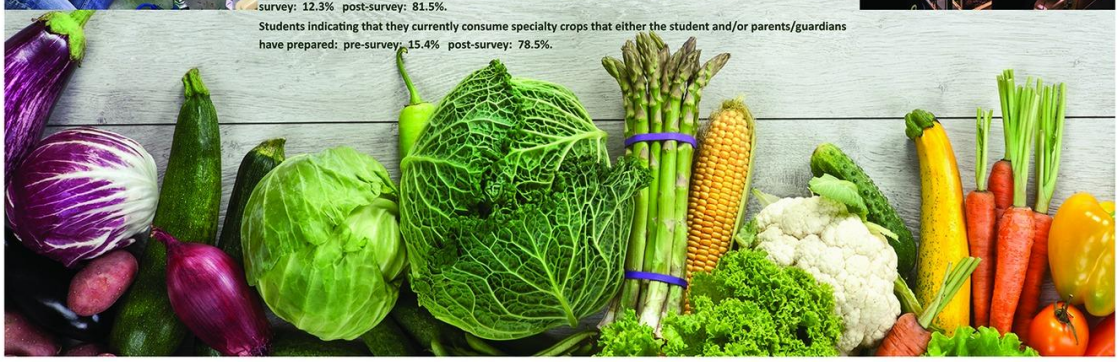
In 2017 and 2018, the Edmunds Central School District located in Edmunds County of North Central South Dakota was awarded a combined award of nearly $92,000 to increase the exposure to and the consumption of specialty crops in PreK-12 students by distributing mobile classroom growing systems and by developing curriculum geared toward educating and providing opportunities to consume specialty crops not routinely consumed by PreK-12 students in South Dakota's schools due to budget limitations and produce availability.

The project advanced in three phases. During phase one the Edmunds Central School District carried out research and development concerning protocols and developing curriculum associated with growing specialty crops in classrooms for education and consumption purposes during the 2017-18 school year. Phase two involved training teachers during the summer of 2018 on how to utilize the growing equipment and how to incorporate specialty crops into the curriculum. Phase three involved the implementation of the program in classrooms across South Dakota with coordinated curriculum and technical support provided by the lead school district in the cohort throughout the 2018-19, 2019-20, and 2020-21 school years. Throughout all three phases, extensive efforts were made to recruit and retain educators into the project and promulgate the concept of growing specialty crops in classrooms for educational and nutritional purposes through presentations, workshops, and media.

Results: All totaled 70 classrooms in 55 school districts participated in the program including 2,690 student participants along with impacting an estimated 4,143 adult parents/guardians. Participating students were given pre-surveys before beginning any work with the mobile growing systems and associated curriculum and post-surveys after they had completed any curriculum relating to specialty crops the teacher had covered.

Marked shifts in knowledge and perceptions were indicated among participating students:

- Students indicating knowledge of specialty crops: pre-survey: 13.0% post-survey 90.8%
- Students indicating consumption of specialty crops: pre-survey: 24.6% post-survey: 99.6%
- Students indicating recent consumption of more specialty crops: pre-survey: 12.3% post-survey: 84.6%
- Students indicating that their parents were aware of specialty crops: pre-survey: 9.2% post-survey: 95.4%
- Students indicating that their parents intend to eat more specialty crops: pre-survey: 10.8% post-survey: 89.2%
- Students indicating that their parents consume specialty crops: pre-survey: 18.4% post-survey: 98.5%
- Students were exposed to at least 141 documented varieties of specialty crops.
- Students were asked to name a specialty crop: pre-survey: 0.17 specialty crops per response, post-survey: 9.55 specialty crops per response.
- Students indicating that they had produced, prepared, and/or preserved specialty crops: pre-survey: 13.8% post-survey: 66.2%
- Students indicating that they intend to produce, prepare, and/or preserve specialty crops in the near future: pre-survey: 12.3% post-survey: 81.5%.
- Students indicating that they currently consume specialty crops that either the student and/or parents/guardians have prepared: pre-survey: 15.4% post-survey: 78.5%.




Specialty Crops in the Classroom
Specialty Crops in the Classroom
Edmunds Central School District
SCIENCE 3D


Specialty Crops in the Classroom
Specialty Crops in the Classroom
Educating South Dakota's Youth through Mobile Classroom Growing Systems
USDA
FIND A TEACHING JOB YOU LOVE


SPECIALTY CROPS IN THE
CLASSROOM

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INDEPENDENT
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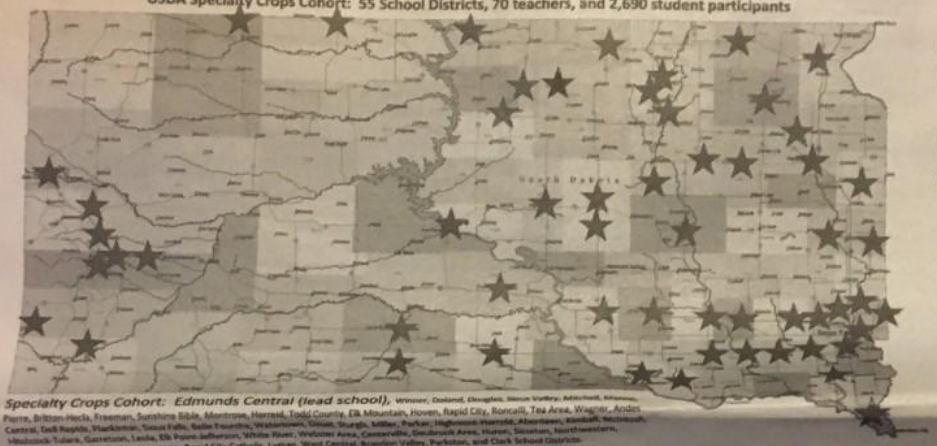
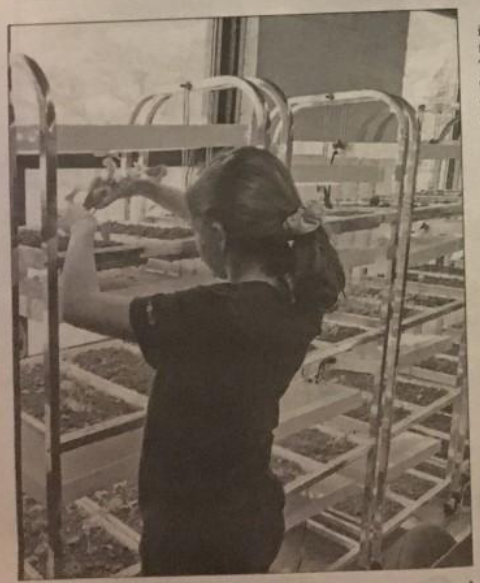
USDA Specialty Crops Cohort: 55 School Districts, 70 teachers, and 2,690 student participants



Specialty Crops Cohort: Edmunds Central (lead school), Wessington, Doland, Douglas, Stone Valley, Mitchell, Mission, Pierre, Britton-Hecla, Freeman, Sunshine Bible, Montrose, Harrold, Todd County, Elk Mountain, Hoven, Rapid City, Roncalli, Tea Area, Wagner, Arden Central, Dell Rapids, Flandreau, Sioux Falls, Belle Fourche, Watertown, Onida, Sturgis, Miller, Parker, Highmore-Harrold, Aberdeen, Kimball, Wolsey-Wessington, Hitchcock-Tulare, Garretson, Lacka, Elk Point-Jefferson, White River, Webster Area, Casselton, Deubrook Area, Huron, Sisseton, Northwestern, Bowdle, Florence, Hot Springs, Lemmon, Rapid City Catholic, Lyman, West Central, Brandon Valley, Parkston, and Clark School Districts

Edmunds Central science students exhibit crop project



Working on the specialty crop area at Edmunds Central School. *(Courtesy photos)*

Edmunds Central School is taking a group of students to the National Science Teaching Association (NSTA) Conference in Los Angeles to exhibit the school's Specialty Crops project.

Edmunds Central was awarded a combined award to increase the exposure to and the consumption of specialty crops in Pre-K-12 students.

The three-phase project involved students and educators in 70 classrooms and 55 school district in South Dakota.

During phase one Edmunds Central students researched and developed protocols and curriculum associated with growing specialty crops in classrooms for education and consumption purposes during the 2017-18 school year.

Phases two and three involved educators and students across South Dakota.

According to EC science teacher Spencer Cody expansive efforts were made to recruit and retain educators into the project and promulgate the concept of growing specialty crops in classrooms for education and nutritional purposes through presentations, workshops and media.

Third Grade Letters to the Editor page 2

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Edmunds Central Holiday concert

Edmunds Central students will help you celebrate the holidays. The students will present their Christmas concert on Thursday, Dec. 9 at 7 p.m. in the school.

Hosmer Seniors

The Hosmer Seniors meal will be served at noon on Thursday, Dec. 16 in the Legion. Bingo will follow.

Weather

by Leland Treichel
Roscoe Weather Observer

	HI	LO	PR	SN	WN
Nov. 29	55	25			28
Nov. 30	46	24	.01		19
Dec. 1	64	33	T		25
Dec. 2	44	29			15
Dec. 3	37	26		T	21
Dec. 4	37	30	.03	.8	22
Dec. 5	32	-2	T	T	44

November 2021 Precipitation — .47 inches
2021 Year to date Precipitation — 18.03 inches
November 2021 snow — 1.6"
2021 Year to Date Snow — 6.57 inches
2021-22 Winter Snow — 1.6 inches
November 2021 Highest temperature 11/6 — 66°
November 2021 Lowest temperature 11/25 — 2°

November 2020 Precipitation — Trace
2020 Year to date Precipitation — 11.81 inches
November 2020 snow — 1 inch
2020 Year to Date Snow — 79.3 inches
2020-21 Winter Snow — 16.2 inches
November 2020 Highest temperature 11/4, 7 — 71
November 2020 Lowest temperature 11/30 — 10

Rylee Sowards, Corbin Beyers, Paxton Malsam, Adam Hettick, Luz Ramirez and Tara Fischer.

tured are Zuko Noisy Hawk and Tenley Heyne. Several classes sang holiday numbers, accompanied by teacher Mr. Jackson on guitar. The junior and high school band played Christmas songs as well. They asked the audience to join the band, singing a familiar carol.

Edmunds Central science students present at NSTA conference in Los Angeles

The Edmunds Central School District sent two teachers and six students to the National Science Teaching Association (NSTA) Conference in Los Angeles December 9-11.

During the conference information on Edmunds Central's role in implementing Specialty Crops education in districts throughout the state through a Specialty Crops block grant from the USDA was presented during a formal presentation session and throughout the conference as an exhibit. Students were able to present on the same Specialty Crops program that they had once been participants in during Biology or Life Science.

This opportunity allowed students to experience a professional conference and the process of presenting on educational research and curriculum development.

In addition to their participation with the conference, the students did a number of science-themed activities around the conference schedule such as the San Diego Zoo, La Brea Tar Pits, the Griffith Observatory, the Aquarium of the Pacific, and a whale watching cruise.

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EC students at the conference were, front row, left to right, Theo Haerter, Eden Weiland, Carlee Crawford, and Hope Hoerner; back row, Alanna Wiedrich and Jasmin Garcia. The students were accompanied by science teacher Spencer Cody and Sarah Kretchman, the middle and high school ag teacher and FFA advisor. *(Courtesy photo)*